UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/598,266	08/23/2006	Kevin I. Smith	CE12867EP	2070

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MOTOROLA, INC.
1303 EAST ALGONQUIN ROAD
IL01/3RD
SCHAUMBURG, IL 60196

EXAMINER
WOO, KUO-KONG

ART UNIT	PAPER NUMBER
2617	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Docketing.US@motorola.com

	Application No.	Applicant(s)
Office Action Summary	10/598,266	SMITH ET AL.
	Examiner	Art Unit	
	KUO WOO	2617	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>1/7/2009</u>.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-8</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-8</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>23 August 2006</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

        1.☒ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   This action is response to the communication mailed on December 29, 2008;

applicant has submitted an amendment, files on January 7, 2009.

2.   Claims 1-8 are pending in this action. Claims 1, 3, 5 and 7 have been amended.

Claim 9 has been canceled.

3.   Applicant's arguments with respect to claims 1-8 have been considered but are

moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 101

4.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
> matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
> conditions and requirements of this title.

Claim(s) 1-8 are rejected under 35 U.S.C. 101 as not falling within one of the four

statutory categories of invention.   Supreme Court precedent and recent Federal Circuit

decisions indicate that a statutory "process" under 35 U.S.C. 101 must (1) be tied to

another statutory category (such as a particular apparatus), or (2) transform underlying

subject matter (such as an article or material) to a different state or thing. See in re

Bilski (USPQ2d 1385 (Fed. Cir. 2008)).

 While the instant claim(s) recite a series of steps or acts to be performed, the claim(s)

neither transform underlying subject matter nor positively tie to another statutory

category that accomplishes the claimed method steps, and therefore do not qualify as a

statutory process.   For example method claim that would not qualify as a statutory

process would be a claim that recited purely mental steps. Thus, to qualify as a 101

statutory process, the claim should positively recite the other statutory class (the thing

or product) to which it is tied – by, for example, reciting the particular apparatus actually

performing one or more of the steps. Specially, the method described in Claims 1-8 are

broad enough to be reasonably interpreted as being completed mentally and without the

use of a machine.

For example, In Claim 1, <u>searching, defining, generating and employing by the MOSA to</u>

<u>select the operation parameters; and applying operation parameters in the operation of</u>

<u>the communication network.</u> Those parameters do not require a machine to complete

above tasks and is applying to the communication network which does not generate the

steps as claimed. Another example, Post Service can be treated as communication

network which won't apply the method claimed herewith.

Further, Claim 1 des not describe a transformation of underlying subject matter to a

different state or thing. For example <u>searching, defining, generating and employing by</u>

<u>the MOSA to select the operation parameters</u> steps in Claim 1 fail to show a

transformation of underlying subject matter to a different state or thing. Rather, the claim

shows the steps which fail to qualify as the necessary transformation.

Claims 2-8 are rejected for similar rationales as Claim1.

Claim Rejections - 35 USC § 112

5.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

Regarding claim 5, the phrase "process <u>can perturb </u>the present solution for x, x'"

renders the claim indefinite because capable language is too board and unclear

whether the limitation(s) following the phrase are part of the claimed invention. See

MPEP § 2173.05(d).

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

7.   Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Admitted of the instant application (background ground treats as prior Art) (hereinafter

APA) in view of Nam (Non Patent Literature (NPL) Pareto-based cost simulated

annealing for multiobjective optimzation) and in further view of Zitzler ((NPL)

Multiobjective Evolutionary Algorithms: A Comparative Case Study and the Strength

Pareto Approach).

Regarding claim 1," a method of selecting operational parameters of a

communication network" APA background teaches (Page 3, lines 13-18,

Communication networks require optimization procedures that help to balance

competing performance indicators such as coverage, capacity and quality of service.

Typically these optimizations must be performed as a function of network parameters;

" Defining and searching an Operational parameter space" APA (Page 3, lines 22-25, build a system model and then search the parameter space to identify an optimal value of a performance metric function related to an objective, such as a performance indicator. Search methods for exploring large parameter spaces include genetic algorithms and simulated annealing processes);

"Employing by the MOSA process a dominance-based energy functions" APA (Page 4, lines 7-13, Simulated annealing (SA) processes analogies the crystallization of a fluid into a minimum-energy state. In SAs, the parameter values are perturbed in relation to a notional temperature. If the resultant change in energy (the chosen metric) is negative, the perturbation is kept. If the resulting change in energy is positive, the perturbation is kept according to a temperature-dependent probability), However, APA does not explicitly teach "generating by the MOSA process an archive of estimated values of a Pareto front"

In an analogous art, Nam teaches (Col 2, Pareto optimality and it is wildly used in the many multiobjective optimization including the evolutionary algorithms), wherein including searching precision (performance) , search time, Uniform probability distribution over the optimal set (an archive of estimated value) and information about Pareto frontier (MOSA) process. Use the concept of Pareto optimality and domination, which is widely used in evolutionary approached in the multiobjective optimization.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use APA's teaching in combination of Nam provides powerful search algorithm and has good results in various single or multiobjective

optimization field (see Abstract). Rationales for arriving at a conclusion of obviousness

suggested by the Supreme Court's decision in KSR include: Combine prior art elements

according to known method to yield predictable result.

Regarding claim 2, "wherein the dominance -based energy function(x), is defined

substantially as $E(x) = \mu (\sim F_x)$"   Nam discloses (Col 5, Figure 1: The concept of the

Pareto-based cost of two objective optimization. The Pareto- based cost (where is

equivalent to energy here) of state x is the area S_x, in which all state dominate state

x.and Zitzler discloses (Col. 3, equation (2) mathematically, the concept of Pareto

optimality is as follows: Assume, without loss of generality, a maximization problem and

consider to decision vectors a, $b \in X$, then, a is said to dominate b (a> b), Equation (2) is

similar expressing as claim 2. A vector function f that maps multiple operational "m"

parameters to multiple" n" objectives, where the f is measure defined on $(\sim Fx')$ and

$(\sim Fx)$.The same algorithms under convergence is taking advantage of using the Pareto-

optimal front. The element μ is equivalent as f function which to select from many

variable parameters to two dominate objectives. Energy is one of solution of the

objective functions to the algorithms. To achieve the cost saving is equivalent to the

energy saving.

Regarding claim 3, Nam discloses MOSA process and dominance-based energy

function. However, Nam does not explicitly teach"wherein the difference in the

dominance-based energy function between solution x and proposed perturbed solution

X' is evaluate substantially as "Equation "all terms as defined herein".

In an analogous art, Zitzler discloses (Col. 8, Coverage of two sets: Let X', X''$\subseteq$ X be two sets of decision vectors. The function C maps the ordered pair (X', X'') to the interval [0,1]   Equation (7). The value C (X', X'') =1 means that all points in X'' are dominated by or equal to points in X'. Both applicant and reference use similar equation to express the difference in the dominance-based energy function between solution x and proposed perturbed solution X'.

Regarding claim 4, "wherein estimated Pareto front are obtained by randomly sampling an attainment surface of the archive of estimated values of the Pareto front". Zitzler discloses (Col. 2, Thereby, two complementary quantities measures are considered in order to access the performance of the algorithms concerning the tradeoff surfaces produced. A random-search strategy as well single-objective EA serve as additional points of reference.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use APA's teaching in combination of Nam and Zitzler provides powerful search algorithm and has good results in various single or multiobjective optimization field (see Abstract). Rationales for arriving at a conclusion of obviousness suggested by the Supreme Court's decision in KSR include: Combine prior art elements according to known method to yield predictable result.

Regarding claim 5, "wherein the MOSA process can perturb the present solution for x, x' that is scales using one of tow scaling schemes"; Nam discloses (Col 6, 3.2.1 Neighbor Sampling and Population Sampling, when the state transition is considered between state x and y (x'), neighbor sampling takes N samples within the boundary of

hyper-sphere with radius of ||x-y||, wherein the values of the Pareto front are obtained

by Neighbor and/or Population Sampling. One of two scaling scheme scaling is

equivalent to the neighbor sampling to get X' and X' solution from location scaling.

Regarding claim 6, "wherein objectives may be based upon performance

indicators from any or all of the following categories ", APA clearly discloses capacity;

coverage and quality of service are performance indicators in background section.

Regarding claim 7, "wherein notional cost are applied to the objectives and/or the

operational parameters according to a given scenario" Nam discloses (Col. 4, lines 50-

55, Pareto-based cost, a new multiobjective optimization method that satisfies the

detailed balanced condition of the SA. Instead using the cost functions directly, we used

the Pareto-based cost stimulated annealing (PCSA), wherein cost is essential part of

decision process.

Regarding claim 8, "A method according to claim 7, wherein the solution with the

lowest cost within the archive of estimated values of the Pareto front is chosen for a

given scenario" The claim 8 is rejected as same reason as claim 4 and 7, wherein the

solution within the lowest cost of collected values of the Pareto front is chosen.

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to combine APA's teaching in invention of Nam and

Zitzler applying a known technique to a known device ready for improvement to yield

predictable results.

Conclusion

8.　　Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

　　　　Any inquiry concerning this communication or earlier communications from the examiner should be directed to KUO WOO whose telephone number is (571)270-7266. The examiner can normally be reached on Monday through Friday 9:30-6:00.

　　　　If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on 571-272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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published applications may be obtained from either Private PAIR or Public PAIR.

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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KUO WOO/
Examiner, Art Unit 2617

/Lester Kincaid/

Supervisory Patent Examiner, Art Unit 2617